

MANAGEMENT.

(8) The reservoir should be filled with oil before the lamp is lit.

(9) The lamp should be kept thoroughly clean, all oil should be carefully wiped off, and all charred wick and dirt removed before lighting.

(10) When first lit the wick should be partially turned down, and then gradually raised.

(11) The wick should not be left turned down, as there is then a greater liability to explosion in lamps of unsafe construction.

(12) Lamps which have no extinguishing apparatus should be put out as follows:—The wick should be turned down until there is only a small flickering flame, and a sharp puff of breath should then be sent across the top of the chimney, but not down it.

(13) Cans or bottles used for oil should be free from water and dirt, and should be kept thoroughly closed.

Note.—These suggestions apply to ordinary petroleum or paraffin lamps such as are generally used, and not to benzoline or spirit lamps.

FORTHCOMING SCIENTIFIC BOOKS.

WE print below a list of books on science promised for publication during the spring season:—

Messrs. Swan Sonnenschein and Co., Limited, announce:—*Analytic Psychology*, by G. F. Stout, 2 vols.; *Outlines of Logic and Metaphysics*, by Johann Eduard Erdmann, translated from the fourth German edition, with a prefatory essay, by Dr. B. C. Burt; *An Introduction to the Study of Philosophy*, by Prof. Oswald Külpe, translated under the supervision of Prof. E. B. Titchener; *Text-book of Paleontology for Zoological Students*, by Theodore T. Groom, fully illustrated; *The Indian Calendar*, with Tables for the Conversion of Hindu and Muhammedan into A.D. dates and *vice versa*, by Robert Sewell, with Tables of Eclipses visible in India, by Dr. Robert Schram; *Practical Plant Physiology*, by Prof. Wilhelm Detmer, translated by S. A. Moor; *Introduction to the Study of Organic Chemistry*, by J. Wade; *Fishes*, by the Rev. H. A. Macpherson; *Mammalia*, by the Rev. H. A. Macpherson; *Birds' Eggs and Nests*, by W. C. J. Ruskin Butterfield; *Mosses*, by J. E. Bagnall, fourth edition; *The Dynamo, how Made and how Used*, by S. R. Bottone, ninth edition; *Geometry for Kindergarten Students*, by Adeline Pullar, 499 illustrations.

Messrs. Cassell and Co., Limited, give notice of *Cottage Gardening*, *Poultry*, *Bees*, *Allotments*, *Food*, *House*, *Window and Town Gardens*, edited by W. Robinson, fully illustrated and containing coloured plates, half-yearly volume; new volumes of the "Century Science" Series, edited by Sir Henry Roscoe, F.R.S.:—*Sir Humphrey Davy*, by T. E. Thorpe, F.R.S.; *J. Clerk Maxwell and Modern Physics*, by R. T. Glazebrook, F.R.S.; *Birds' Nests, Eggs, and Egg Collecting*, by R. Kearton, illustrated; *Lessons in Carpentry Workshop Practice*, by Charles F. Mitchell, new and revised edition; *Cassell's Gazetteer of Great Britain and Ireland*, with numerous illustrations and maps in colours, vol. iii.; *The Countries of the World*, by Dr. Robert Brown, profusely illustrated, vol. ii. of the cheap edition; *The World of Wonders*, illustrated, vol. i. of the cheap edition; *Science for All*, illustrated; *Cassell's Concise Cyclopædia*, illustrated.

Messrs. Macmillan and Co., Limited, will publish *Miscellaneous Papers* by Heinrich Hertz, with an introduction by Prof. Philipp Lenard, authorised English translation by D. E. Jones and G. A. Scholt; *Studies in the Art Anatomy of Animals*, being a brief analysis of the visible forms of the more familiar mammals and birds, designed for the use of sculptors, painters, illustrators, naturalists, and taxidermists, by Ernest E. Thompson; *Text-book of Comparative Anatomy*, by Dr. Arnold Lang, translated into English by Henry M. Bernard and Matilda Bernard, part ii.; *Macmillan's Geography Readers*, book v., *Europe*, book vi., the *Colonies of Great Britain*, illustrated; *A System of Medicine*, by many writers, edited by Thomas Clifford Allbutt, F.R.S.; *Domestic Science Readers*, by Vincent T. Murché, for standards i.-vi.; *Science Class Books*:—*Physics for Medical Students*, by Alfred Daniell; *The Scenery of Switzerland*, by Sir John Lubbock, Bart., F.R.S.; *a Dictionary of Chemical Solubilities*, *Inorganic*, by Dr. Arthur Messenger Comey; *The Theory of Sound*, by Lord Rayleigh, F.R.S., vol. ii., second edition, revised and enlarged.

The Cambridge University Press has in preparation:—*The Collected Mathematical Papers of the late Arthur Cayley*, F.R.S., to be completed in thirteen volumes, vol. ix.; *An Introductory Treatise on the Lunar Theory*, by Prof. E. W. Brown; *The Scientific Papers of John Couch Adams*, F.R.S., vol. i., edited by Dr. William Grylls Adams, F.R.S.; *A Treatise on Abel's Theorem*, by H. F. Baker; *Cambridge Natural Science Manuals, Biological Series*, general editor, A. E. Shipley; *Elementary Paleontology, Invertebrate*, by H. Woods, new edition; *A Manual of the Phanerogams and Ferns, Morphology, Natural History and Classification*, alphabetically arranged by J. C. Willis; *Physical Series*, general editor, R. T. Glazebrook, F.R.S.; *Electricity and Magnetism*, by R. T. Glazebrook, F.R.S.; *Cambridge Geographical Series*, general editor, Dr. F. H. H. Guillemard; *Geographical Distribution of Mammals*, by R. Lydekker, F.R.S.

Mr. W. B. Clive (University Correspondence College Press) announces:—*A Manual of Psychology*, by G. F. Stout; *A Manual of Logic*, by J. Welton, complete in 2 volumes, vol. i., 2nd edition; *Questions on Welton's Logic, with Illustrative Examples*, by H. Holman, Key to Holman's "Questions on Welton's Logic"; *A Primer of Logic*, by J. Welton; *Euclid, Books i.-iv.*, by Rupert Deakin; *Deductions in Euclid*, by T. W. Edmondson and J. Briggs; *Geometrical Conic Sections, Co-ordinate Geometry, part ii.*, *A Higher Text-book of Dynamics*, *A Higher Text-book of Hydrostatics*, each by Dr. G. H. Bryan, F.R.S.; *Key to the Elementary Mechanics of William Briggs and G. H. Bryan, F.R.S.*; *The Tutorial Trigonometry, An Intermediate Text-book of Statics, An Intermediate Text-book of Dynamics, The Tutorial Algebra*, each by William Briggs and Dr. G. H. Bryan, F.R.S.; *The Properties of Matter, an Introduction to the Tutorial Physics*, by E. Catchpool; *Inorganic Chemistry, First Stage; A Synopsis of Non-Metallic (Inorganic) Chemistry*, by William Briggs, 4th edition, revised by W. Hurlley; *A Synopsis of Metallic Chemistry*, by W. Hurlley; *The Tutorial Chemistry*, by Dr. G. H. Bailey; part i. *Non-metals*; part ii. *Metals*; *Magnetism and Electricity, First Stage*; *Sound, Light and Heat, First Stage*, by John Don.

Messrs. Crosby Lockwood and Son's announcements are:—*Light Railways for the United Kingdom, India, and the Colonies: a Practical Handbook on their Construction, Equipment, &c.*, by J. C. Mackay; *Nitro-Explosives: a Practical Treatise on their Manufacture, Properties, and Analysis*, by P. Gerald Sanford; *Colliery Working and Management: comprising the Duties of a Colliery Manager, and the Different Systems of working Coal Seams*, by H. F. Bulman and R. A. S. Redmayne; *The Detection and Estimation of Inflammable Gas and Vapour in the Air*, by Prof. Frank Clowes, with a chapter on the Detection of Inflammable Petroleum-Vapour, by Boverton Redwood; *Handy General Earthwork Tables*, by J. H. Watson Buck; a fourth edition of *F. W. Simms's Practical Tunnelling*, revised and greatly extended, with additional chapters illustrating recent practice, by D. K. Clark; and a new edition of *Warn's The Sheet Metal Worker's Instructor*, rewritten and greatly extended by J. G. Horner.

Mr. John C. Nimmo promises *The Flora of the Alps*, being a description of all the species of flowering plants indigenous to Switzerland, and of the Alpine species of the adjacent mountain districts of France, Italy, and Austria, including the Pyrenees, by Alfred W. Bennett, with 120 coloured plates, 2 vols.; *A Natural History of British Moths*, by the Rev. F. O. Morris, fourth edition, with an introduction by Dr. W. Egmont Kirby, and 132 plates coloured by hand, 1933 figures of moths; *A History of British Birds*, by the Rev. F. O. Morris, in 36 monthly parts, vol. ii., containing 7-12, with 69 plates coloured by hand.

Messrs. Sampson Low, Marston, and Co., Limited, are preparing:—*Text-book of Zoology*, by Dr. J. E. V. Boas, translated by J. W. Kirkaldy and E. C. Pollard, illustrated; *Short Studies in Physical Science*, by Vaughan Cornish, with four plates; *Handbook of Arctic Discoveries*, by General A. W. Greely, with portrait and maps; *The Land of an African Sultan, Travels in Morocco*, by Walter B. Harris; *The Wild North Land*, by General Sir W. F. Butler; *Textile Calculators*, by E. A. Posselt; *Health and Condition in the Active and the Sedentary*, by N. E. Yorke-Davies, third edition, revised and enlarged.

Messrs. A. and C. Black promise *Artistic and Scientific Taxidermy and Modelling*, by Montagu Browne; *Text-book of General Pathology and Pathological Anatomy*, by Prof. Thoma,

translated by Dr. Alexander Bruce, 2 vols; *Plea for a Simpler Life*, by Dr. George S. Keith, fifth edition; *The Evolution of Bird-song*, with observations on the influence of heredity and imitation, by Charles A. Wittchell.

Messrs. Smith, Elder, and Co.'s list is as follows:—*The Spas and Mineral Waters of Europe*, with Notes on the Utility of Spa Treatment in various Diseases and Morbid Conditions, by Drs. Hermann Weber and Frederick Parkes Weber; *The Treatment of Phthisis*, by Arthur Ransome, F.R.S.

Messrs. G. P. Putnam's Sons' announcements include:—*The Evolution of Horticulture in New England*, a History of the Art of Gardening in New England from its earliest plantation to the present day, by Daniel Denison Slade; *A Scientific Demonstration of the Future Life*, by Thomson Jay Hudson; *Handbook for Hospitals*, a manual of practical suggestions, by Abby Howland Woolset.

Messrs. W. H. Allen and Co., Limited, will publish Allen's Naturalists' Library, edited by Dr. R. Bowdler Sharpe, illustrated; *British Birds*, vols. iii. and iv., by the editor; *Butterflies*, vol. ii. by W. F. Kirby; *Game Birds*, vol. ii., by W. R. Ogilvie Grant.

Mr. Young J. Pentland's list contains:—*Atlas of the Fundus Oculi*, illustrated with figures in colours by W. Adams Frost; *The Principles of Treatment*, by Dr. J. Mitchell Bruce; *The Edinburgh Hospital Reports*, vol. iv.; a new edition of Prof. Cunningham's *Manual of Practical Anatomy*, in 2 vols., with additional illustrations.

Mr. Wm. F. Clay, Edinburgh, has in the press:—*The Histopathology of the Diseases of the Skin*, by Dr. P. G. Unna, translated from the German with the assistance of the author by Dr. Norman Walker, with double coloured plate containing nineteen illustrations and forty-two additional illustrations in the text.

Mr. Erwin Nägele, Stuttgart, announces *Researches on Mimicry on the basis of a Natural Classification of the Papilionidae*, by Dr. E. Haase, translated by Dr. C. M. Child, with eight coloured plates, 4to, part ii.

Messrs. Whittaker and Co. will publish immediately:—*Future Trade in the Far East*, by C. C. Wakefield, fully illustrated, and containing a map showing the latest developments in the trade routes.

The Rebman Publishing Company, 11 Adam Street, Strand, W.C., have ready for immediate publication, *Water and Water Supplies*, by Dr. J. C. Thresh.

Mr. F. Furchheim, Naples, announces *Bibliografia del Vesuvio e del suo Territorio*, compiled by Federigo Furchheim.

Mr. David Douglas (Edinburgh) will issue *The Vertebrate Fauna of Scotland*, vols. vi. and vii.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

THE recent decision of the Supreme Court of the United States in favour of Mrs. Stamford, and adverse to the Government in its claim for 13,000,000 dollars, means the salvation of the Leland Stamford Junior University, at Palo Alto, California; as Mrs. Stamford will now be able to carry out the munificent plan of endowment, which has been held in abeyance pending the issue of this litigation. The Johns Hopkins University at Baltimore, on the contrary, is seriously crippled by the collapse of the Baltimore and Ohio Railroad system, which has just been put into the hands of a receiver. The University held a large amount of the securities of this line.

THE County Council of Southampton has decided not to levy a rate of a halfpenny in the pound, under the Technical Instruction Act, which had been recommended by the Finance Committee with a view of assisting the Hartley Institution, a school of science and art, in that town. As far as we can gather, Southampton is suffering from a plethora of educational authorities. Besides the Council of the above institution, the Endowed Schools governors and the School Board are also engaged in providing different grades of technical education.

WE notice that on Monday, the 16th inst., a deputation of the Lancashire Committee of the Incorporated Association of Head Masters waited upon the Technical Instruction Committee of the Lancashire County Council, to urge the claims of the secondary schools in the county upon the Committee. They based their claims upon the admitted imperfect education of the students

who presented themselves at the technical schools for instruction, urging that the want of proper preliminary education could be avoided by a liberal offering of scholarships to the secondary schools, which out of the increased income resulting from the augmentation of numbers, could easily ensure a satisfactory introductory training for the future students. Attention was also very properly called to the work of this kind which had been carried out in other counties. Though the chairman expressed a fear that want of funds would prevent very much being done for secondary schools, we are sure, in view of his admission that the Committee agreed that these schools were the proper places for much of the early work in a good system of technical education, that it will not be long before the Lancashire authority does something to meet the claims urged by the deputation.

THE latest report of the Technical Instruction Committee of the Derbyshire County Council is very refreshing reading. The pamphlet is prefaced by an explanation of what the Committee considers to be the proper scope of technical education. It is rightly affirmed that a complete system has two main objects: (1) to provide for those who may naturally be expected to occupy positions of control, *i.e.* the "managers"; (2) to provide for the class from which individuals are constantly rising to positions of control, *i.e.* the "men." Recognising that the recent industrial developments of Germany are in a very large measure due to the scientific training of the managers and foremen, the Derbyshire Committee very early turned its attention to the secondary schools, as being the institutions where this class receives its early education. Very much has been done to improve the standard and nature of the instruction given in the grammar schools of the country. In giving help to these educational establishments it has in every case been insisted upon that it is desirable only to give a general education in English and languages, and to add a solid groundwork of mathematics, drawing, and pure science, without dealing with their application to specific industries. At the same time it has not been lost sight of that those students who will naturally pass on to occupy positions of high responsibility, must receive special courses of instruction at technical schools and higher educational institutions. In dealing with the requirements of the "men," the Committee have wisely decided that the teaching in elementary schools is best supplemented by a course of object-lessons in elementary science. To ensure this being well done, classes for elementary school teachers have been organised, with a view to teaching them how to give instruction in this way. The scholar's education can then be suitably continued in evening schools and science and art classes, which have been arranged in each district according to its needs. For the more advanced study which is necessary for most of the first class of students and for a considerable proportion of the second, who themselves desire it, a technical school is naturally stated to be of great importance. Instead of attempting to found such an institution themselves, the Committee have decided that the wisest course is, by a careful system of grants, scholarships, and exhibitions, to utilise the excellent colleges of Nottingham, Sheffield, Manchester and Derby, which all border upon their administrative county.

In addition to the above work, we would especially notice the initiation of the Midland Dairy Institute, the inauguration of a Department of Mining at Firth College, Sheffield, the establishment of local classes in "hosiery" at Heanor, in "calico printing, bleaching, &c.," at New Mills, and in the principle of design at various centres. The year's work is a decidedly successful one, and we hope to see several other counties following the logical and scientific methods of procedure which the Derbyshire Committee have laid down.

SCIENTIFIC SERIALS.

THE *Quarterly Journal of Microscopical Science* for February, 1896, contains:—On the early development of *Amia*, by Bashford Dean (Plates 30–32). *Amia calva*, possibly the sole survivor of the race of the Mesozoic Ganoids, claims our special interest as the nearest ancestral form of some, if not of all, of our recent Teleosts. In embryology the Ganoid and the Teleost still stand widely separate; there has even been a tendency to look upon these kindred forms as representing different phyla, early divergent from a primitive chordate ancestor. This, therefore, renders the details given by Dr. Dean